MEC E 537 AERODYNAMICS, 2013 Edition

LECTURES: MWF 12:00-12:50 Mec 2-1

INSTRUCTOR: Dr. L. Sigurdson
   E-mail: lorenz.sigurdson@ualberta.ca
   Office: Mec 5-1B, Ph: 780-492-5425
   Office Hours: Wednesday 3-5 pm (if you cannot make until 5-6, let me know and we would try to arrange), catching me immediately after class is often fine, or by appointment in special cases.

TEACHING ASSISTANTS:
   Mr. Royce Boyer, E-mail: hboyer@ualberta.ca, Office: Mec 5-29, Office Hours: Thursday 1-3 pm (unless otherwise announced), Ph: 492-0802
   Ms. Larissa Marleau, E-mail: lmarleau@ualberta.ca, Office: CCIS 3-257B, Office Hours: Tuesday 2-4 pm, (unless otherwise announced) Ph: 780-914-9814

PRE-REQUISITE: MEC E 330 Fluid Mechanics or permission of the instructor

REQUIRED MATERIALS:
   Dr. Ilan Kroo, *Applied Aerodynamics - A Digital Textbook*
   Desktop Aerodynamics, Inc., available on the web, see eClass link. Also [http://www.desktopaero.com](http://www.desktopaero.com)
   Note: this is not as good as a regular textbook, and should not be thought of as such. Although not required, you may consider purchasing Anderson’s book listed below in bold italics for a more complete discussion of concepts.

GRADING: Assignments 60%, Final Exam 40% Thursday April 25th at 2:00 PM
   • Nonprogrammable Faculty approved calculators only, many questions very similar to assignments and those asked at the beginning of lectures.

WEBSITE: Material will be listed on eClass → please check frequently!

COURSE OUTLINE: (approximate, slight changes are likely!)
   Chapter 1: Introduction
   Chapter 2: Fluid Fundamentals
   Chapter 3: Solution Methods
   Chapter 4: 2D Potential Flow
   Chapter 5: Airfoils, Part I
   Chapter 7: Boundary layers
   Chapter 8: Airfoils, Part II: Design
   Chapter 12: Wing Design
   Automobile Aerodynamics
   Hovering Flight - one person vehicles, (Personal Flying Vehicles PFD’s)
   Possible Miscellaneous Aerodynamics Topics (if time permits): bluff body aerodynamics, stability, microflight, ....
REFERENCE TEXTS:

Anderson, Fundamentals of Aerodynamics  
3rd (or later) Edition McGraw Hill  
Call Number: TL 570 A677 2001

Smentana, Introductory Aerodynamics and Hydrodynamics of Wings and Bodies: A Software-Based Approach  
1st Edition AIAA Educational Series

Eppler, Airfoil Design and Data  
2th Edition Springer-Verlag  
Houghton and Carpenter, Aerodynamics for Engineering Students  
4th Edition Wiley  
Call Number: TL 570 H83 1993

Kuethe and Chow, Foundations of Aerodynamics: Bases of Aerodynamic Design  
Call Number: TL 570 K95 1986

McCormick, Aerodynamics, Aeronautics, and Flight Mechanics  
4th Edition Wiley  
Call Number: TL 570 M13 1979

Thwaites, Incompressible Aerodynamics  
1st Edition Dover Publications  
Call Number: TL 570 T54

Ashley and Landahl, Aerodynamics of Wings and Bodies  
1st Edition Dover Publications  
Call Number: TL 570 A815 1985

Abbot and von Doenhoff, Theory of Wing Sections  
2nd Edition Dover Publications  
Call Number: TL 672 A12 1959

Bertin and Smith, Aerodynamics for Engineers  
2nd Edition Prentice-Hall  
Call Number: TL 570 B54 1989
NOTES:

1. **DEADLINES:** Assignments are due by 4:00 pm the following Thursday unless otherwise announced. Hand them into the appropriate box on the 4th floor (near the Mec E Office). The assignment box will be emptied at 4:00 PM on the due dates. Any report handed in after that time is considered late.

2. **LATE ASSIGNMENT PENALTIES:** All late assignments must be turned in personally to the TA’s, or failing that, delivered personally to Dr. Sigurdson in Room 5-1B. Please **DO NOT** leave them in the assignment box or under office doors, in which case there is no way to determine how late the assignment was. *This may cost you the maximum late penalty* of the following:
   - < 24 hrs late, -15%;
   - < 48 hrs late, -30%;
   - < 72 hrs late, -60%;
   - >= 72 hrs late, penalty = -100%.

   The percentages are applicable to the mark you get, and weekend hours are counted. **If you know that you are going to be late with your report, the professional behaviour is to notify the TA as soon as you know, and cc the instructor if it is an email.** The late penalties will still apply unless special dispensation has been provided by the instructor for extenuating circumstances.

3. Exams are based on lecture and assignment material. **No provision for past evaluated course material will be made.** Many questions will have been seen before as very similar to assignments and those asked at the beginning of lectures.

4. The use of Engineering judgment is essential when solving problems as a practicing engineer. Answers from work submitted by the student must follow from the solution development, have consistent units, and have correct magnitude and sign.

5. The official University grading system will be implemented using a combination of absolute measures and a distribution to determine grades.

6. Policy about course outlines can be found in section 23.4(2) of the University Calendar.

7. **PLAGIARISM AND CHEATING**
   Plagiarism, to steal or pass off the words or ideas of another as one's own, will not be tolerated.

   “The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold policies at the
University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behaviour (online at http://www.uofaweb.ualberta.ca/gfcpolicymanual/content.cfm?ID_page=37637) and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offense. Academic dishonesty is a serious offense and can result in suspension or expulsion from the University.”

The "Don't Cheatsheet" is available on the University Governance website http://www.governance.ualberta.ca/en/StudentAppeals/DontCheatsheet.aspx.

8. **Audio or video recording of lectures** or any other teaching environment by students is allowed only with the prior written consent of the instructor or as a part of an approved accommodation plan. Recorded material is to be used solely for personal study, and is not to be used or distributed for any other purpose without prior written consent from the instructor.